09/609,110

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=> d his

     (FILE 'HOME' ENTERED AT 07:45:47 ON 14 MAR 2002)

     FILE 'CA' ENTERED AT 07:46:27 ON 14 MAR 2002
                  E JACOB MICHAEL/IN
L1              8 S E3-E4
                  E RUMPLER KARLHEINZ/IN
L2              1 S E3
L3              2 S FLUID?(P)BED(P)HORIZONTAL?(P)EXPANSION(3W)ZONE#(P)(AIR OR
GAS
L4              2 S FLUID?(P)BED(P)HORIZONTAL? AND EXPANSION(3W)ZONE#
L5              0 S L4 NOT L3
L6           1271 S FLUID?(P)BED(P)HORIZONTAL?
L7         332085 S (REDUC#### OR DECREAS###)(P)(AIR OR GAS?)
L8         162161 S EXPANSION
L9            150 S L6 AND L7
L10             6 S L8 AND L9
L11             5 S L10 NOT L3
L12          1103 S EXPANSION(3W)(ZONE# OR AREA# OR PORTION# OR SPACE#)
L13             3 S L6 AND L12

     FILE 'USPATFULL' ENTERED AT 08:43:29 ON 14 MAR 2002
L14          1750 S L9
L15            44 S L14 AND L12
L16          1797 S DUST?(P)FILTER?(P)(RETURN? OR RECYCL? OR REGENERAT?)
L17             0 S L15 AND L16
L18            31 S L14 AND L16
L19          4011 S (DUST? OR FINE#)(P)FILTER?(P)(RETURN? OR RECYCL? OR
REGENERAT
L20            61 S L14 AND L19
L21            30 S L20 NOT L18
L22             2 S FLUID?(P)BED AND L7 AND L12 AND L19
L23            53 S L13
L24        482947 S (REDUC? OR DECREAS? OR ADJUST?)(P)(AIR OR GAS?)
L25            45 S L23 AND L24
L26             0 S L25 AND L19
L27        180267 S DETERGENT# OR DETERSIVE# OR SURFACTANT# OR SURFACE ACTIVE
OR
L28             0 S L25 AND L27

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L1           8 ("JACOB MICHAEL"/IN OR "JACOB MICHEL"/IN)

=> d 1-8 l1 ti

L1    ANSWER 1 OF 8   CA  COPYRIGHT 2002 ACS
TI    Manufacture of granulated or agglomerated heavy duty detergent
      compositions

L1    ANSWER 2 OF 8   CA  COPYRIGHT 2002 ACS
TI    Method for producing a nanotubular carbon material, and the material
      produced thereby

L1    ANSWER 3 OF 8   CA  COPYRIGHT 2002 ACS
TI    Method for producing a non-volatile semiconductor memory cell

L1    ANSWER 4 OF 8   CA  COPYRIGHT 2002 ACS
TI    Manufacture of granulated mixed fertilizer

L1    ANSWER 5 OF 8   CA  COPYRIGHT 2002 ACS
TI    Producing melt suspensions, emulsions, or solutions for the manufacture
of
      granular fertilizer mixtures

L1    ANSWER 6 OF 8   CA  COPYRIGHT 2002 ACS
TI    Fluidized-bed apparatus for treating dispersed materials and
      solids-containing liquids

L1    ANSWER 7 OF 8   CA  COPYRIGHT 2002 ACS
TI    Cast iron-nickel alloy for press bending of glass panels

L1    ANSWER 8 OF 8   CA  COPYRIGHT 2002 ACS
TI    Protection of steel against corrosive gases, especially fluorides

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L1   ANSWER 6 OF 8  CA  COPYRIGHT 2002 ACS
AN   129:124178  CA
TI   Fluidized-bed apparatus for treating dispersed materials and
     solids-containing liquids
IN   Jacob, Michael; Wessel, Axel; Ruempler, Karlheinz
PA   Glatt Ingenieurtechnik G.m.b.H., Germany
SO   Ger. Offen., 6 pp.
     CODEN: GWXXBX
DT   Patent
LA   German
IC   ICM  B01J008-24
     ICS  B01J002-16; B01J008-44; F26B003-08
CC   47-4 (Apparatus and Plant Equipment)
FAN.CNT 1
     PATENT NO.         KIND  DATE           APPLICATION NO.  DATE
     ---------------    ----  --------       ---------------  --------
PI   DE 19700029         A1   19980709       DE 1997-19700029 19970102
AB   The app. contains an openings-contg. flow-in bottom and is divided with
     obstructions into stages.  For controlling the material properties of the
     end products with respect to the moisture content, grain size, and grain
     edges, the opening ratio of the free surface:the total surface of the
     flow-in bottom increases in the direction of the material transport.  The
     obstructions are arranged in such a way to form a gap between them and
the
     flow-in such, and the velocity and amt. of the fluidizing medium supplied
     to the flow-in such is controlled by the arrangement of fans, dampers,
     etc.
ST   fluidized bed app treatment dispersed material; solids contg liq
treatment
     fluidized bed
IT   Disperse systems
     Suspensions
        (fluidized-bed app. for treating)
IT   Fluidized beds
        (for treating dispersed materials and solids-contg. liqs.)


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L2   ANSWER 1 OF 1  CA  COPYRIGHT 2002 ACS
AN   135:182417  CA
TI   Manufacture of granulated or agglomerated heavy duty detergent
     compositions
IN   Jacob, Michael; Rumpler, Karlheinz
PA   Glatt Ingenieurtechnik Gmbh, Germany
SO   Eur. Pat. Appl., 7 pp.
     CODEN: EPXXDW
DT   Patent
LA   German
IC   ICM  C11D011-00
     ICS  C11D011-02
CC   46-6 (Surface Active Agents and Detergents)
FAN.CNT 1
     PATENT NO.        KIND  DATE           APPLICATION NO.  DATE
     ---------------   ----  --------       ---------------  --------
PI   EP 1126017         A1   20010822       EP 2000-103515   20000218
         R:  AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT,
             IE, SI, LT, LV, FI, RO
AB   Solid detergent compn. with improved mech. strength, low dust content and
     particle size 0.2-2.00 mm is manufd. by use of a fluidized bed process in
     which the solid components are sprayed with binder solns., suspensions or
     melts (no examples).  The dust particles carried with the process air are
     captured by passing through an expansion zone and an attached filter and
     returned to the agglomeration zone.  A process flow diagram is included.
ST   detergent heavy duty granulate manuf fluidized bed process; fluidized bed
     binder spraying drying detergent granulate manuf
IT   Granulation
        (fluidized-bed, drying; manuf. of granulated or agglomerated heavy
duty
        detergent compns.)
IT   Drying
        (fluidized-bed, granulation; manuf. of granulated or agglomerated
heavy
        duty detergent compns.)
IT   Detergents
        (granular, heavy duty; manuf. of granulated or agglomerated heavy duty
        detergent compns.)
RE.CNT  4      THERE ARE 4 CITED REFERENCES AVAILABLE FOR THIS RECORD
RE
(1) Danish Oil Mills Ltd; GB 1341557 A 1973 CA
(2) Henkel Kgaa; DE 4304015 A 1994 CA
(3) Henkel Kgaa; DE 4422607 A 1996 CA
(4) Henkel Kgaa; DE 19750424 A 1999


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L3   ANSWER 1 OF 2  CA  COPYRIGHT 2002 ACS
AN   132:166781  CA
TI   Reactor for continuous gas phase polymerization in horizontal fluidized
     bed for use with high-yield catalysts
IN   Mattos de Lemos, Paulo; Jardim Zacca, Jorge
PA   Opp Petroquimica S.A., Brazil
SO   Braz. Pedido PI, 37 pp.
     CODEN: BPXXDX
DT   Patent
LA   Portuguese
IC   ICM  C08F002-34
CC   35-9 (Chemistry of Synthetic High Polymers)
FAN.CNT 1
     PATENT NO.       KIND  DATE           APPLICATION NO.  DATE
     ---------------  ----  --------       ---------------  --------
PI   BR 9704926        A    19990511       BR 1997-4926     19970930
```

AB   The app. consists of a **horizontal** block having an **expansion zone** above the **fluidized bed**, which in turn comprises a disengagement zone and solid particle collection zone; the **fluidized bed** which consists of three chambers sepd. from the plenum chambers; and the **gas** circulation loop integrated to heat exchangers, compressors, and **gas** reservoirs. The height of the **fluidized bed** is one tenth to one half that of vertical **fluidized bed** reactors and the app. is designed to produce polymers from .alpha.-olefins, polar vinyl monomers, dienes, acetylenes, and aldehydes in **gas** mixts. Each **fluidizing** zone can operate with a sep. **gas** feed mixt. and temp. and the **bed** is set at an angle that depends on the d. and adherence of the polymer being produced and that allows for wt.-driven flow of polymer particles through each zone. A low-d. copolymer of 1-butene and ethylene was prepd. using a transition metal catalyst, MAO activator, an electron donor, was produced in the reactor using a **fluidized bed** 3-zone configuration. The yield of polymer and productivity increased with the no. of **fluidization** zones.

```
ST   fluidized bed horizontal block polymn reactor; gas phase continuous
polymn
     reactor; ethylene butene polymn fluidized bed transition metal catalyst
IT   Aluminoxanes
     RL: CAT (Catalyst use); USES (Uses)
        (Me; variable zone fluidized bed horizontal reactor for continuous gas
        phase polymn. of olefins and vinyl monomers with high-yield catalysts)
IT   Reactors
        (fluidized-bed; variable zone fluidized bed horizontal reactor for
        continuous gas phase polymn. of olefins and vinyl monomers with
        high-yield catalysts)
IT   Fluidized beds
        (reactors; variable zone fluidized bed horizontal reactor for
        continuous gas phase polymn. of olefins and vinyl monomers with
        high-yield catalysts)
IT   Heat exchangers
     Polymerization apparatus
        (variable zone fluidized bed horizontal reactor for continuous gas
        phase polymn. of olefins and vinyl monomers with high-yield catalysts)
IT   Transition metals, uses
     RL: CAT (Catalyst use); USES (Uses)
        (variable zone fluidized bed horizontal reactor for continuous gas
```

phase polymn. of olefins and vinyl monomers with high-yield catalysts)
IT 9010-79-1P, Ethylene-propylene copolymer 25087-34-7P, 1-Butene-ethylene copolymer
RL: IMF (Industrial manufacture); PREP (Preparation)
(variable zone fluidized bed horizontal reactor for continuous gas phase polymn. of olefins and vinyl monomers with high-yield catalysts)

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=> d 2 13 all

L3   ANSWER 2 OF 2  CA  COPYRIGHT 2002 ACS
AN   118:150186  CA
TI   Modeling of linear expansion zone of a
     horizontal gas jet in fluidized bed
     of large particles
AU   Xuereb, C.; Laguerie, C.; Avaro, M.; Baron, T.
CS   ENSIGC, CNRS, Toulouse, Fr.
SO   Recents Prog. Genie Procedes (1991), 5(11, Fluidisation), 130-7
     CODEN: RPGPEX
DT   Journal
LA   French
CC   48-7 (Unit Operations and Processes)
AB   A math. model based on the general equations of mass and momentum
     conservation was developed to describe the flow properties of a gas jet
     introduced horizontally into a fluidized bed with coarse particles.  The
     effects of the main phys. and operating parameters on the jet
development,
     as well as on the entrainment of solid particles and the formation of
     local reduced-pressure areas, were easily detd. by computer processing of
     data.  Good agreement between exptl. data and model predictions was
found.
ST   flow jet fluidized bed; mass transfer jet fluidization; coarse particle
     jet fluidization
IT   Mass transfer
        (in fluidization of coarse particles in presence of horizontal gas
jet)
IT   Fluidization
        (of coarse particles, introduction and expansion of horizontal gas jet
        in)
IT   Flow
        (jet, horizontal, in fluidization of coarse particles, model of)


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=> d 1-5 l11 ti

L11  ANSWER 1 OF 5  CA  COPYRIGHT 2002 ACS
TI   Prediction of the particle flow conditions in the freeboard of a freely
     bubbling fluidized bed

L11  ANSWER 2 OF 5  CA  COPYRIGHT 2002 ACS
TI   Hydration enhanced sulfation of limestone and dolomite in the
     fluidized-bed combustion of coal

L11  ANSWER 3 OF 5  CA  COPYRIGHT 2002 ACS
TI   Fluidized beds with internal screens.  I.  Study of a two-dimensional bed

L11  ANSWER 4 OF 5  CA  COPYRIGHT 2002 ACS
TI   Process for the treatment of fluids

L11  ANSWER 5 OF 5  CA  COPYRIGHT 2002 ACS
TI   Motion and mixing of solid particles in a fluidized bed

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=> d 1-5 l11 hit

L11 ANSWER 1 OF 5 CA COPYRIGHT 2002 ACS

AB The d. and flux of particles in the freeboard of a freely bubbling **fluidized bed** is a function of the size, aspect ratio and frequency of bubbles erupting at the surface of the dense **bed**. To predict the velocity and amt. of material thrown into the freeboard, a previous model for the eruption of a single bubble T. W. Yule and L. R. Glicksman (1989) was reformulated to deal with the eruption of a multiple bubbles undergoing coalescence at the **bed** surface. The soln. includes the explicit mechanics of particle elements in the nose of the leading bubble as well as the particle elements in the wakes of bubbles trapped between coalescing bubbles. The motive force for the particle acceleration is the excess **gas** flow through the cavity at the **bed** surface. The **gas** flow, in turn is found from a numerical soln. spanning the **bed** from the upper surface to the distributor. The solns. for a single erupting bubble, two vertically aligned bubbles, and three vertically aligned bubbles were obtained numerically. The predicted vertical mass flux of particles **decreases** exponentially with height. The smooth fall off of the predicted flux with height above the **bed** is due to the consideration of sep. particle elements which have different initial conditions at different points around the nose of the bubble. The soln. for the erupting single sphere agrees with the measurements of S. E. George and J. R. Grace (1978). For a freely bubbling **bed,** the frequency of bubble eruptions and the probability of coalescence at the **bed** surface can be obtained from a statistical model of the bubbling process which has been used before to predict accurately the **expansion** of bubbling beds of L. R. Glicksman et al.(1991). Combining the statistical model with the predictions for single eruptions results in a prediction of the flux and d. distributions in the freeboard. Measured d. distributions above a freely bubbling **bed,** contg. **horizontal** tubes, are in general agreement with the model predictions. The distributions are found to be primarily controlled by the bubble size at the **bed** surface, the vol. fraction of bubbles in the **bed** and the excess **gas** velocity. The predicted exponential coeff. for d. and mass flux is consistent with the correlation of exptl. results given by D. Kunii and O. Levenspiel (1990).

L11 ANSWER 2 OF 5 CA COPYRIGHT 2002 ACS

AB In the removal of SO2 by dolomite or limestone sorbents in **fluidized-bed** coal combustion, hydration of residual CaO in the partially sulfated sorbents is a promising technique for increasing Ca utilization by increasing the SO2-removal capacity of the sorbents. The techniques is applicable to a variety of limestones and dolomite but is more effective on stones with less initial Ca conversion. The effectiveness of hydration is related to the change in pore-size distribution caused by **expansion** of particles by the formation of Ca(OH)2 and by formation of new porosity by dehydration of Ca(OH)2 and recrystn. of CaO. Limestones and dolomites were sulfated under a simulated flue **gas** contg. SO2 0.3, O 5, CO2 20% and the balance N in **horizontal** tube furnaces. The resultant spent sorbent was sprayed with H2O to hydrate all available CaO, heated to 850.degree. to det. the H2O content by wt. loss, dried, precalcined, and resulfated.

Expts. done in an atm. **fluidized bed** combustor are described. The increased Ca utilization, as shown in the tube furnace expts. and verified in PDU (process-development unit)-scale combustor expts., **reduces** the amt. of limestone required to **reduce** SO2 levels in **fluidized bed** combustor off-**gas** to EPA emission stds. The amt. of solid waste produced and the costs assocd. with managing the environmental impacts are also **reduced**
.

L11 ANSWER 3 OF 5 CA COPYRIGHT 2002 ACS

AB The elimination of bubbles from **fluidized** beds by screens was studied. The screens consisted of sets of **horizontal,** 12-mm-diam. tubes with center-to-center spacing 2, 4, or 6 cm. The no. of sets was 1, 2, and 3, the height above the distributor was 17-60 cm, and the difference between the heights of the 1st and 2nd and the 2nd and 3rd sets was 5-20 and 5-15 cm. The **gas** distributors were a screen, a perforated plate, and a sintered, porous plate. Data on the min. and complete **fluidization** velocities, the bubble-size distribution, and the **bed expansion** are presented. The efficiency of bubble-size **decrease** by a screen is discussed.

IT Bubbles
(in **fluidized bed,** break up of, by screens of **horizontal** cylinders)

L11 ANSWER 4 OF 5 CA COPYRIGHT 2002 ACS

AB A device is presented for holding filtration, ion exchange, or other solid materials through which **fluids** are to be passed. The device consists of a rigid casing contg. a flexible casing in which the filter material is placed. The top and bottom of the flexible casing is enclosed by a pervious material to permit **fluid** flow and the inner flexible casing is sealed at the top and bottom to the outer rigid casing to provide a space between the containers into which liquids or **gases** under pressure may be admitted to apply a **horizontal** pressure to the filter material. This **horizontal** pressure may be adjusted to prevent channel formation or **bed** disruption during regenerative back-wash or to permit lateral **expansion** of the filter media as a result of swelling. A variable chamber vol. in the inner flexible casing may be used to allow for vertical **expansion** of the filter media. In an application of the app. to the softening of water by a cation-exchange resin, a total **bed** vol. of 420 l. was placed in a 1100-mm. layer in the flexible casing allowing an upper **expansion** height of 900 mm. The top and bottom of the flexible casing were closed with plastic disks contg. 4 mm. holes permitting passage of the water but preventing passage of the exchange resin. Water being softened was passed through in a downward direction. For regeneration of the spent exchanger, the flexible wall of the inner casing was compressed such that the **expansion** space was completely eliminated and NaCl soln. followed by tap water was passed through the **bed** in an upward direction. The casing was then expanded, the filter again rinsed in a downward direction and the exchanger was ready for use. A significant **decrease** in the amt. of regenerant soln. is claimed relative to that used when regenerant soln. is passed through in a downward direction.

L11 ANSWER 5 OF 5 CA COPYRIGHT 2002 ACS

AB The fluctuating velocities of solid particles in a **fluidized** **bed** were measured by a spherical probe, rigidly connected to a **horizontal** spring. Collisions of particles with the sphere are recorded by 2 strain gages attached to the spring. The frequency of fluctuations was in the range of 5-30 cycles. The velocity u reached a max. and then **decreased** with increasing **fluidizing** **gas** velocities w and **bed expansion** factor (1-.epsilon.), its magnitude being lower for polydisperse particles than for homogeneous ones. The effective diffusion coeff., found from the distribution of K2Cr2O7 particles in sand and magnetite in barite, D* .apprxeq.0.1 ul, where l is the scale of the fluctuations. The effective cond., calcd. from heat transfer from a coaxially installed cylindrical heating element to an annular cooling jacket, is .lambda.* .apprxeq.10-2 ulcmpm (1 - .epsilon.), where cm is sp. heat of solids. .lambda.* = 30-170 for homogeneous, and .apprx.10 kcal./m. hr. .degree.C. for polydisperse systems. The effective viscosity, measured by a perforated rotor viscometer, is .mu.* .apprxeq. 10-2 ulpm(1-.epsilon.). For small **bed** columns l. .apprxeq. R, where R is the column radius.

=>

=> d 1-3 l13 hit

L13 ANSWER 1 OF 3 CA COPYRIGHT 2002 ACS

TI Reactor for continuous gas phase polymerization in **horizontal** **fluidized bed** for use with high-yield catalysts

AB The app. consists of a **horizontal** block having an **expansion zone** above the **fluidized bed**, which in turn comprises a disengagement zone and solid particle collection zone; the **fluidized bed** which consists of three chambers sepd. from the plenum chambers; and the gas circulation loop integrated to heat exchangers, compressors, and gas reservoirs. The height of the **fluidized bed** is one tenth to one half that of vertical **fluidized bed** reactors and the app. is designed to produce polymers from .alpha.-olefins, polar vinyl monomers, dienes, acetylenes, and aldehydes in gas mixts. Each **fluidizing** zone can operate with a sep. gas feed mixt. and temp. and the **bed** is set at an angle that depends on the d. and adherence of the polymer being produced and that allows for wt.-driven flow of polymer particles through each zone. A low-d. copolymer of 1-butene and ethylene was prepd. using a transition metal catalyst, MAO activator, an electron donor, was produced in the reactor using a **fluidized bed** 3-zone configuration. The yield of polymer and productivity increased with the no. of **fluidization** zones.

ST **fluidized bed horizontal** block polymn reactor; gas phase continuous polymn reactor; ethylene butene polymn **fluidized bed** transition metal catalyst

IT Aluminoxanes
RL: CAT (Catalyst use); USES (Uses)
(Me; variable zone **fluidized bed horizontal** reactor for continuous gas phase polymn. of olefins and vinyl monomers with high-yield catalysts)

IT Reactors
(**fluidized-bed**; variable zone **fluidized bed horizontal** reactor for continuous gas phase polymn. of olefins and vinyl monomers with high-yield catalysts)

IT **Fluidized** beds
(reactors; variable zone **fluidized bed horizontal** reactor for continuous gas phase polymn. of olefins and vinyl monomers with high-yield catalysts)

IT Heat exchangers
Polymerization apparatus
(variable zone **fluidized bed horizontal** reactor for continuous gas phase polymn. of olefins and vinyl monomers with high-yield catalysts)

IT Transition metals, uses
RL: CAT (Catalyst use); USES (Uses)
(variable zone **fluidized bed horizontal** reactor for continuous gas phase polymn. of olefins and vinyl monomers with high-yield catalysts)

IT 9010-79-1P, Ethylene-propylene copolymer 25087-34-7P, 1-Butene-ethylene copolymer
RL: IMF (Industrial manufacture); PREP (Preparation)
(variable zone **fluidized bed horizontal** reactor for continuous gas phase polymn. of olefins and vinyl monomers with high-yield catalysts)

L13 ANSWER 2 OF 3 CA COPYRIGHT 2002 ACS

TI Modeling of linear **expansion zone** of a **horizontal** gas jet in **fluidized bed** of large particles

AB A math. model based on the general equations of mass and momentum conservation was developed to describe the flow properties of a gas jet introduced **horizontally** into a **fluidized bed** with coarse particles. The effects of the main phys. and operating parameters on the jet development, as well as on the entrainment of solid particles and the formation of local reduced-pressure areas, were easily detd. by computer processing of data. Good agreement between exptl. data and model predictions was found.

L13 ANSWER 3 OF 3 CA COPYRIGHT 2002 ACS

AB A device is presented for holding filtration, ion exchange, or other solid materials through which **fluids** are to be passed. The device consists of a rigid casing contg. a flexible casing in which the filter material is placed. The top and bottom of the flexible casing is enclosed by a pervious material to permit **fluid** flow and the inner flexible casing is sealed at the top and bottom to the outer rigid casing to provide a space between the containers into which liquids or gases under pressure may be admitted to apply a **horizontal** pressure to the filter material. This **horizontal** pressure may be adjusted to prevent channel formation or **bed** disruption during regenerative back-wash or to permit lateral expansion of the filter media as a result of swelling. A variable chamber vol. in the inner flexible casing may be used to allow for vertical expansion of the filter media. In an application of the app. to the softening of water by a cation-exchange resin, a total **bed** vol. of 420 l. was placed in a 1100-mm. layer in the flexible casing allowing an upper expansion height of 900 mm. The top and bottom of the flexible casing were closed with plastic disks contg. 4 mm. holes permitting passage of the water but preventing passage of the exchange resin. Water being softened was passed through in a downward direction. For regeneration of the spent exchanger, the flexible wall of the inner casing was compressed such that the **expansion space** was completely eliminated and NaCl soln. followed by tap water was passed through the **bed** in an upward direction. The casing was then expanded, the filter again rinsed in a downward direction and the exchanger was ready for use. A significant decrease in the amt. of regenerant soln. is claimed relative to that used when regenerant soln. is passed through in a downward direction.

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=> d 84 19 all

L9   ANSWER 84 OF 150  CA  COPYRIGHT 2002 ACS
AN   94:158912  CA
TI   Dispersed material segregation in a fluidized bed
AU   Gel'perin, N. I.; Ainshtein, V. G.; Zakharenko, V. V.; Gordonov, B. S.
CS   USSR
SO   Khim. Prom-st. (Moscow) (1980), (11), 686-9
     CODEN: KPRMAW; ISSN: 0023-110X
DT   Journal
LA   Russian
CC   48-7 (Unit Operations and Processes)
AB   Segregation of a dispersed material in a fluidized bed
     was studied with various mixts. of quartz sand in a lab. column.  With
     increasing air velocity, the segregation rate increased but its
     efficiency decreased.  Placing horizontal sieves in
     the column limited formation and growth of gas bubbles and
     mixing of solid particles.  With increasing bed height,
     segregation decreased.  The optimum results were obtained with
     sieves having a mesh size 1.2 mm and a fraction 0.334 mm diam.
ST   segregation fluidized bed
IT   Segregation
        (in fluidization)
IT   Fluidization
        (segregation in)

=>
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=> d 117 19 all

L9 ANSWER 117 OF 150 CA COPYRIGHT 2002 ACS
AN 70:79505 CA
TI Mixing of solid in gas-solid fluidized beds
AU Pippel, Winfried; Runge, Klaus; Geyer, Horst; Lehmann, Walter; Mueller, Fritz
CS Tech. Univ. Dresden, Dresden, Ger.
SO Chem. Tech. (Berlin) (1968), 20(12), 750-5
CODEN: CHTEAA
DT Journal
LA German
CC 48 (Unit Operations and Processes)
AB A demonstration is attempted to show how, in **gas**-solid **fluidized** beds, the mixing and residence time behavior of a solid can be detd. by simple charge expts. in lab. app. and how the interpretation and operation of industrial equipment can be optimized. Mixing must be detd. in vertical, **horizontal**, longitudinal, an transversal direction. By using only small layer heights, vertical mixing can be assumed as complete, and the investigations are limited to this condition. In the velocity ranges studied, it was assumed that longitudinal mixing of the solid substance is effected essentially by a process similar to diffusion, neglecting other influences. A radioactive tracer (24NaCl) was introduced into the **fluidized** layer at a detd. location. After a certain time, the local distribution was measured, and a mixing coeff. was calcd. to characterize longitudinal mixing of the solid substance. The solid substances were $(NH_4)_2SO_4$ (grain size 0.1-1.25 mm.) or sand (grain size 0.2-0.5 mm.) in layers up to 35 cm. in height, **fluidized** with **air**. The tracer was added as a neutral soln. immediately before each test by means of an atomizer, followed by drying. The desired **air** flow velocity was adjusted and the time was measured from the beginning of uniform **fluidization** to breakdown of the layer upon shutting off the **air** stream. Continuous measurements were made with scintillation counters. Samples (1 cm.3 vol.) were extd. from the smaller app. and larger samples of 1 kg. from a larger-size app. The counting rate is const. in the transversal direction, though with statistical fluctuations. The measured longitudinal values can be approximated by a linear function. The counting rate comprises an error by statistical radioactive decay, different **bed** height, and a geometrical factor detd. by inactive filling solid. The relative mixing coeff. error was 10-20%. A dependence of the mixing coeff. of either $(NH_4)_2SO_4$ or sand could not be found, nor a dependence on the location of the tracer on mixing characteristics. There is a dependence on **fluidizing** velocities. At low velocities, mixing is low and increases linearly above a certain threshold velocity. The mixing coeff. increases as a linear function of the layer height. Incorporation of transversal sheet-metal separators markedly **decreases** the longitudinal mixing coeff. Formulas are given for calcg. the optimal operation parameters for mixing coeffs., and mass and

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     heat transfer.
ST   mixing gas solids fluidized beds; fluidized beds gas solids mixing
IT   Isotopes
     RL: USES (Uses)
        (as indicators, of mixing of solids in fluidized bed)
IT   Mixing
        (of solids in fluidized bed)
IT   Fluidized beds
        (solids mixing in)
IT   13982-04-2, uses and miscellaneous
     RL: USES (Uses)
        (as indicator, of mixing of solids in fluidized bed)


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```
> d 1-44 l15 ti

L15  ANSWER 1 OF 44  USPATFULL
TI     Cooled tubes arranged to form impact type particle separators

L15  ANSWER 2 OF 44  USPATFULL
TI     Producing liquid iron having a low sulfur content

L15  ANSWER 3 OF 44  USPATFULL
TI     Method for preparing pre-coated aluminum-alloy components and
components
       prepared thereby

L15  ANSWER 4 OF 44  USPATFULL
TI     Method of providing fuel for an iron making process

L15  ANSWER 5 OF 44  USPATFULL
TI     FCC apparatus with enclosed vented riser

L15  ANSWER 6 OF 44  USPATFULL
TI     Method of processing waste material containing non ferrous metal oxides

L15  ANSWER 7 OF 44  USPATFULL
TI     Apparatus and process for cooking potatoes

L15  ANSWER 8 OF 44  USPATFULL
TI     Method of providing fuel for an iron making process

L15  ANSWER 9 OF 44  USPATFULL
TI     FCC process with enclosed vented riser

L15  ANSWER 10 OF 44  USPATFULL
TI     FCC process with enclosed vented riser

L15  ANSWER 11 OF 44  USPATFULL
TI     Method of using rubber tires in an iron making process

L15  ANSWER 12 OF 44  USPATFULL
TI     Method of providing fuel for an iron making process

L15  ANSWER 13 OF 44  USPATFULL
TI     Method of processing electric arc furnace dust and providing fuel for
an
       iron making process

L15  ANSWER 14 OF 44  USPATFULL
TI     Low slag iron making process with injecting coolant

L15  ANSWER 15 OF 44  USPATFULL
TI     Very low slag iron making process

L15  ANSWER 16 OF 44  USPATFULL
TI     Method of disposing of environmentally undesirable material and
       providing fuel for an iron making process e.g. petroleum coke

L15  ANSWER 17 OF 44  USPATFULL
TI     Cyclonic mixing and combustion chamber for circulating fluidized bed
       boilers
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L15 ANSWER 18 OF 44 USPATFULL
TI Air mattress

L15 ANSWER 19 OF 44 USPATFULL
TI Method and apparatus for measuring and controlling the volumetric weight
of an expanded particulate material

L15 ANSWER 20 OF 44 USPATFULL
TI Air mattress with audible pressure relief valve

L15 ANSWER 21 OF 44 USPATFULL
TI Process for preparing a coated-particle salt substitute composition

L15 ANSWER 22 OF 44 USPATFULL
TI Encapsulated yeast

L15 ANSWER 23 OF 44 USPATFULL
TI Fluidized bed heat generator and method of operation

L15 ANSWER 24 OF 44 USPATFULL
TI Steam generator and method of operating a steam generator utilizing
separate fluid and combined gas flow circuits

L15 ANSWER 25 OF 44 USPATFULL
TI Air mattress with pressure relief valve

L15 ANSWER 26 OF 44 USPATFULL
TI Fluidized bed apparatus

L15 ANSWER 27 OF 44 USPATFULL
TI Fluidized bed reactor

L15 ANSWER 28 OF 44 USPATFULL
TI Upflow packed bed catalytic reactor with periodic bed expansion

L15 ANSWER 29 OF 44 USPATFULL
TI Water filtration process and apparatus having upflow filter with buoyant
filter media and downflow filter with nonbuoyant filter media

L15 ANSWER 30 OF 44 USPATFULL
TI Process of preparing a particulate food acidulant

L15 ANSWER 31 OF 44 USPATFULL
TI Particulate food acidulant

L15 ANSWER 32 OF 44 USPATFULL
TI Self-contained fire protection apparatus

L15 ANSWER 33 OF 44 USPATFULL
TI Fluidized bed reactor apparatus and related gasification system

L15 ANSWER 34 OF 44 USPATFULL
TI Fluidized bed apparatus

L15 ANSWER 35 OF 44 USPATFULL

TI   Circulating fluidized bed boiler

L15 ANSWER 36 OF 44 USPATFULL
TI   Electric heat storage apparatus

L15 ANSWER 37 OF 44 USPATFULL
TI   Process for stripping oil from fluidized ash and char particles to prepare the particles for decarbonization

L15 ANSWER 38 OF 44 USPATFULL
TI   Fluid bed combustion method and apparatus

L15 ANSWER 39 OF 44 USPATFULL
TI   Vessel for stripping oil from fluidized ash and char particles

L15 ANSWER 40 OF 44 USPATFULL
TI   Treating carbonaceous matter with hot steam

L15 ANSWER 41 OF 44 USPATFULL
TI   Elevating and conveying system for unloading vessels or the like

L15 ANSWER 42 OF 44 USPATFULL
TI   Purification filter for liquids

L15 ANSWER 43 OF 44 USPATFULL
TI   FLUID-OPERATED MACHINE TOOL WITH MEANS FOR EFFECTING UNIFORM EXPANSION OF ITS FRAME IN RESPONSE TO HEATING BY OPERATING FLUID

L15 ANSWER 44 OF 44 USPATFULL
TI   METHOD AND APPARATUS FOR FLUID CATALYTIC CRACKING

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> d 1-31 118 ti

L18 ANSWER 1 OF 31 USPATFULL
TI Scavenger energy converter system its new applications and its control systems

L18 ANSWER 2 OF 31 USPATFULL
TI Method for treating combustibles by slagging combustion

L18 ANSWER 3 OF 31 USPATFULL
TI Process for the continuous manufacture of steel

L18 ANSWER 4 OF 31 USPATFULL
TI Method and apparatus for separating resource materials from solid waste

L18 ANSWER 5 OF 31 USPATFULL
TI Method for dosing a particulate phase in a gas/particle flow in a fluidized bed

L18 ANSWER 6 OF 31 USPATFULL
TI Method of and device for directly reducing fine-particle ores and concentrates thereof

L18 ANSWER 7 OF 31 USPATFULL
TI Apparatus and method for dosing

L18 ANSWER 8 OF 31 USPATFULL
TI Direct coal fired turbine combined power generation system

L18 ANSWER 9 OF 31 USPATFULL
TI Apparatus and method for dosing a particulate phase present in a gas/particle flow from a fluidized bed

L18 ANSWER 10 OF 31 USPATFULL
TI Fluidized bed selective pyrolysis of coal

L18 ANSWER 11 OF 31 USPATFULL
TI Method for drying sludge

L18 ANSWER 12 OF 31 USPATFULL
TI Process for gas phase polymerization of olefins in a fluidized bed reactor

L18 ANSWER 13 OF 31 USPATFULL
TI Fines recirculating fluid bed combustor method and apparatus

L18 ANSWER 14 OF 31 USPATFULL
TI Zone heating for fluidized bed silane pyrolysis

L18 ANSWER 15 OF 31 USPATFULL
TI Composite zeolitic magnetic material

L18 ANSWER 16 OF 31 USPATFULL
TI Method of making agglomerated cellulosic particles using a substantially horizontal rotating drum

L18 ANSWER 17 OF 31 USPATFULL

TI   Fine particulate feed system for fluidized bed furnace

L18 ANSWER 18 OF 31 USPATFULL
TI   Process for operating a magnetically stabilized fluidized bed

L18 ANSWER 19 OF 31 USPATFULL
TI   Hydrocarbon conversion process utilizing a magnetic field in a
fluidized
        bed of catalytic particles

L18 ANSWER 20 OF 31 USPATFULL
TI   Preparation of imidazoles

L18 ANSWER 21 OF 31 USPATFULL
TI   Dusting apparatus

L18 ANSWER 22 OF 31 USPATFULL
TI   Process for the removal of particulates entrained in a fluid using a
        magnetically stabilized fluidized bed

L18 ANSWER 23 OF 31 USPATFULL
TI   Apparatus for the thermal conversion of gypsum

L18 ANSWER 24 OF 31 USPATFULL
TI   Method of thermally splitting hydrate of aluminum chloride

L18 ANSWER 25 OF 31 USPATFULL
TI   Hydrocarbon conversion process utilizing a magnetic field in a
fluidized
        bed of catalitic particles

L18 ANSWER 26 OF 31 USPATFULL
TI   Process for operating a magnetically stabilized fluidized bed

L18 ANSWER 27 OF 31 USPATFULL
TI   Filter material charging apparatus for filter assembly for radioactive
        contaminants

L18 ANSWER 28 OF 31 USPATFULL
TI   Recovery of solid selectively constituted high purity aluminum chloride
        from hot gaseous effluent

L18 ANSWER 29 OF 31 USPATFULL
TI   Method of removing HF from gases

L18 ANSWER 30 OF 31 USPATFULL
TI   EFFLUENT FILTERING PROCESS AND APPARATUS FOR ALUMINUM REDUCTION CELL

L18 ANSWER 31 OF 31 USPATFULL
TI   DIRECT OXIDATIVE CONVERSION OF SODIUM SULFIDE TO SODIUM SULFITE BY
        ABSORBING THE HEAT OF REACTION IN A FLUIDIZED BED SYSTEM USING
ADIABATIC
        COOLING

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> s fluid?(p)bed and l7 and l12 and l19
        603501 FLUID?
        145654 BED
         44472 FLUID?(P)BED
       1796671 REDUC####
        818181 DECREAS###
        849121 AIR
        755758 GAS?
        406656 (REDUC#### OR DECREAS###)(P)(AIR OR GAS?)
        247902 EXPANSION
        285909 ZONE#
       1309820 AREA#
       1996090 PORTION#
       1417559 SPACE#
          9793 EXPANSION(3W)(ZONE# OR AREA# OR PORTION# OR SPACE#)
L22          2 FLUID?(P)BED AND L7 AND L12 AND L19

=> d 1-2 l22 ti

L22  ANSWER 1 OF 2  USPATFULL
TI     Granular bed filter device including a regenerative granular bed
       cleaning apparatus

L22  ANSWER 2 OF 2  USPATFULL
TI     PROCESS AND APPARATUS FOR PREHEATING POWDER


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